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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/737,386	12/16/2003	Brian T. Brunn	X-1056 US	5383

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2611	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	Applicant(s)
Office Action Summary	10/737,386	BRUNN, BRIAN T.
	Examiner	Art Unit	
	Aslan Ettehadieh	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>16 December 2003</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-15</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1,2,4,6-9 and 11-15</u> is/are rejected.

7)☒ Claim(s) <u>3,5 and 10</u> is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>16 December 2003</u> is/are: a)☐ accepted or b)☒ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

        1.☐ Certified copies of the priority documents have been received.

        2.☐ Certified copies of the priority documents have been received in Application No. _____.

        3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

Specification

1.   The lengthy specification has not been checked to the extent necessary to

determine the presence of all possible minor errors. Applicant's cooperation is

requested in correcting any errors of which applicant may become aware in the

specification.

Oath/Declaration

2.   The oath or declaration is defective. A new oath or declaration in compliance

with 37 CFR 1.67(a) identifying this application by application number and filing date is

required. See MPEP §§ 602.01 and 602.02.

> The oath or declaration is defective because:
> It does not identify the city and either state or foreign country of residence of
> each inventor. The residence information may be provided on either an
> application data sheet or supplemental oath or declaration.

Drawings

3.   The drawings are objected to under 37 CFR 1.83(a). The drawings must show

every feature of the invention specified in the claims. Therefore, the components of

claims 1 – 15 must be shown or the feature(s) canceled from the claim(s). No new

matter should be entered. The following are some examples: regarding claims 2, 9 and

13, the component of the edge detection module needs to be shown, i.e. comparator,

counter, etc.; regarding claim 3, 10, and 14, the components of establishing a

normalized phase error, summing, etc. Applicant's attention for carefully reviewing the

claims due to other such indefiniteness because the drawing for claims 1 – 15 replete

numerous components missing from the drawings.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

4.   Claims 14 – 15 are objected to because of the following informalities: claims 14 – 15 were initially thought to have 112 2nd problems being that they were vague and indefinite and having insufficient antecedent basis for this limitation in the claims. However, in further view of applicant's specification and previous claims, a typographical error was deemed to be the problem. As in independent claims 1 and 8, claims 3, 4 and claims 10, 11 are dependent of intervening claims 2 and 9, respectively. As to this claims structure, the claim is clear and definite, with no lack of antecedent

basis. Please change dependency of claims 14 – 15 to claim 13 in order to remove the vague and indefinite nature of the claim and also to remove the insufficient antecedent basis problem.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

5.   Claims 12 – 15 are rejected under 35 U.S.C. 101 because the preamble states an apparatus but the body of the claim is a memory that stores instructions that cause a processing module to do method steps. Applicant's attention to what type of claim is being drafted, i.e. a computer medium claim needs for example a computer readable medium storing computer executable instructions. The body of the claim discloses only program code. Claims 12 – 15 calls for an apparatus with memory that provides instructions. A claim would be functional and statutory when rewritten with the correct claim language according to the 101 intern guidelines of patent applications for patentable subject matter eligibility (starting on page 50); a program for instance needs to be on a computer readable medium. The claimed program needs to be stored or encoded on a computer readable medium, and thus the claim is not statutory. See Diehr, 450 U.S. at 191, 209 USPQ at 10 and Benson, 409 U.S. at 71-72, 175 USPQ at 676

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6.   Claims 12 – 15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. As to claims 12 – 15, the preamble of the claim indicates an apparatus claim, there is no indication in the body of the claim as how the claimed subject matter is a apparatus, an apparatus claim without claiming the structure of an apparatus, the applicant is either claiming a computer medium type claim or a method claim, please correct the discrepancy.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7.   Claim 6 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claim 6 is only supported by paragraph 19 of the brief summary section of the specification, however, it is not clear to enable one skilled in the art to perform a variable current source operably coupled to provide a variable source current to the loop filter based on a first state of the phase difference that corresponds to when phase of the data signal leads phase of the feedback signal, wherein magnitude of the variable source current is based on the phase error scaling factor; and a variable current sink operably coupled to draw a variable sink current from the loop filter based on a second

state of the phase difference that corresponds to when the phase of the feedback signal

leads the phase of the data signal, wherein magnitude of the variable sink current is

based on the missing transitions. A similar claim 7, shows for instance the duration is

preformed by a scalable delay, see support in figures 2 – 3, paragraph 29.

Claim Rejections - 35 USC § 102

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8.   Claims 1, 8, 12 are rejected under 35 U.S.C. 102(b) as being anticipated by

Homol et al. (US 2002/0126787).

9.   Regarding claims 1 and 8, Homol discloses a data triggered phase locked loop

(PLL) comprises: phase detector operably coupled to determine a phase difference

between transitions of a data signal and a feedback signal (figure 1 element 12,

paragraphs 13 – 14); charge pump operably coupled to convert the phase difference

into a charge pump current (figure 1 element 14, paragraphs 13 – 14); loop filter

operably coupled to convert the charge pump current into a control voltage (figure 1

element 16, paragraphs 13 – 14); voltage controlled oscillator operably coupled to

convert the control voltage into a recovered clock, wherein feedback signal is derived

from the recovered clock (figure 1 element 18, paragraphs 13 – 14); and edge detection

module operably coupled to detect missing transitions of the data signal and to alter at

least one of the phase difference and charge pump current based on the missing

transitions such that bandwidth of the data triggered PLL remains substantially constant

for varying data signal transition densities (figure 1 element 20, paragraphs 15 – 31,

especially paragraphs 21, 25 – 27).

10.   Regarding claim 12, Homol discloses all limitations of claim 12 as analyzed in

claims 1 and 8 above, with the exception of: "processing module; and memory operably

coupled to the processing module, wherein the memory stores operational instructions

that cause the processing module to". Homol further discloses "processing module; and

memory operably coupled to the processing module, wherein the memory stores

operational instructions that cause the processing module to" (figure 4 element 104,

134, paragraphs 11, 33 – 38).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

11.   Claims 2, 4, 9, 11, 13, 15 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Homol et al. (US 2002/0126787) in view of Goldman (US 6256362).

12.   Regarding claims 2, 9, and 13, Homol discloses compare transitions of the

recovered clock with transitions of the data signal (figures 1, 2, paragraph 16); when a

transition occurs in the recovered clock and a substantially contemporaneously

transition does not occur in the data signal, indicate a missing transition of the data

signal (paragraphs 15 – 31). Homol does not disclose increment a missing transition

count of the data signal based on the indication of the missing transition until a transition

of the data signal occurs substantially contemporaneously with another transition of the

recovered clock to produce an accumulated missing transition count; and at each

transition of the data signal, establish a phase error scaling factor based on the

accumulated missing transition count and a phase error-to-missing transition

relationship.

In the same field of endeavor, however, Goldman discloses increment a missing

transition count of the data signal based on the indication of the missing transition until a

transition of the data signal occurs substantially contemporaneously with another

transition of the recovered clock to produce an accumulated missing transition count;

and at each transition of the data signal, establish a phase error scaling factor based on

the accumulated missing transition count and a phase error-to-missing transition

relationship (col. 1 line 39 – col. 2 line 13, col. 3 line 15 – col. 5 line 10, figures 1 – 4).

Therefore it would have been obvious to one skilled in the art at the time of

invention was made to use increment a missing transition count of the data signal based

on the indication of the missing transition until a transition of the data signal occurs

substantially contemporaneously with another transition of the recovered clock to

produce an accumulated missing transition count; and at each transition of the data

signal, establish a phase error scaling factor based on the accumulated missing

transition count and a phase error-to-missing transition relationship as taught by

Goldman in the system of Homol to aid in the locking of a PLL to the correct frequency

and to aid in recovering from loss of lock conditions (col. 1 lines 39 – 42).

13.   Regarding claims 4, 11, and 15, Homol further discloses providing a

mathematical function that relates phase error to number of missing transitions as the

phase error-to-missing transition relationship (figure 1, 2, paragraphs 15 – 31; where

numerous elements could be interpreted as a mathematical function, i.e. the difference, al the logic elements, etc.). Also, Goldman further discloses providing a mathematical function that relates phase error to number of missing transitions as the phase error-to-missing transition relationship; and solving the mathematical function for the accumulated missing transition count (figure 1 – 4, col. 1 line 39 – col. 2 line 13, col. 3 line 15 – col. 5 line 10; where numerous elements could be interpreted as a mathematical function, i.e. the difference, al the logic elements, etc.).

14.   Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Homol et al. (US 2002/0126787) in view of Murata et al. (US 2004/0085108).

15.   Regarding claim 7, Homol does not discloses a variable current source operably coupled to provide as source current during a variable source current on time to the loop filter based on a first state of the phase difference that corresponds to when phase of the data signal leads phase of the feedback signal, wherein duration of the variable source current on time during which the variable current source provides the source current is based on the phase error scaling factor; and a variable current sink operably coupled to draw a sink current during a variable sink current on time from the loop filter based on a second state of the phase difference that corresponds to when the phase of the feedback signal leads the phase of the data signal, wherein duration of the variable sink current on time during which the variable current sink draws the sink current is based on the missing transitions.

In the same field of endeavor, however, Murata discloses a variable current source operably coupled to provide as source current during a variable source current

on time to the loop filter based on a first state of the phase difference that corresponds

to when phase of the data signal leads phase of the feedback signal, wherein duration

of the variable source current on time during which the variable current source provides

the source current is based on the phase error scaling factor; and a variable current sink

operably coupled to draw a sink current during a variable sink current on time from the

loop filter based on a second state of the phase difference that corresponds to when the

phase of the feedback signal leads the phase of the data signal, wherein duration of the

variable sink current on time during which the variable current sink draws the sink

current is based on the missing transitions (abstract, figure 1, paragraphs 17 – 20, 35 –

46, 54 – 66, 70).

Therefore it would have been obvious to one skilled in the art at the time of

invention was made to use a variable current source operably coupled to provide as

source current during a variable source current on time to the loop filter based on a first

state of the phase difference that corresponds to when phase of the data signal leads

phase of the feedback signal, wherein duration of the variable source current on time

during which the variable current source provides the source current is based on the

phase error scaling factor; and a variable current sink operably coupled to draw a sink

current during a variable sink current on time from the loop filter based on a second

state of the phase difference that corresponds to when the phase of the feedback signal

leads the phase of the data signal, wherein duration of the variable sink current on time

during which the variable current sink draws the sink current is based on the missing

transitions as taught by Murata in the system of Homol to reduce noise (paragraph 2).

Other prior art cited

The prior art made of record and not relies upon is considered pertinent to applicant's disclosure.

16.   Jones et al. (US 2002/0125961) discloses a similar specification to Homol et al. (US 2002/0126787).

Allowable Subject Matter

17.   Claims 3, 5 and 10 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

18.   Claim 14 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims and to correct the dependency to overcome the vague and indefinite nature of the claim and also to remove the insufficient antecedent basis problem and to overcome the 101 and 122 rejects above.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aslan Ettehadieh whose telephone number is (571) 272-8729. The examiner can normally be reached on Monday - Friday, 8:00am - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Payne can be reached on (571) 272-3024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

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Business Center (EBC) at 866-217-9197 (toll-free).

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Aslan Ettehadieh
Examiner
Art Unit 2611

</div>

AE

DAVID C. PAYNE
SUPERVISORY PATENT EXAMINER